REMARKS

Only claim 76 stands rejected in view of cited prior art. Claim 76 which has been rejected as unpatentable and obvious over the teachings of Suemura et al. does in fact define nonobvious structure quite different from Suemura et al. We first note that in the rejection, page 4, section 4 of the Office Action, the Examiner stated relative to Suemura et al.:

> "each module (see fig. 9, item 123) having K^2 inputs 125_{0-3} and coupled to K^2 outputs 131_{0-3} with each input coupled to only one output by a separate optical transmitting waveguide with each waveguide extending only between one input and one output pair (shown in fig,. 9, only one waveguide connecting each input 127 to only one output 129; also col. 11, lines 5-33)."

It is submitted that the above phraseology is in fact inconsistent with the structure and disclosure of Fig. 9 of Suemura et al. In Fig. 9, unlike the structure of claim76, the input optical signals are processed. In Fig. 9, each of the inputs lambda 0, λ1, λ2, λ3 is coupled to a respective splitter 127(0), (1), (2), and (3). Each of the splitters produces four outputs, each of which is identical to the respective input. Each of the split outputs is coupled to a respective input of each one of four multiplexers, 129(0), (1), (2), and (3). Hence, each of the multiplexers, such as MUX 129(0) is fed by four different inputs, one from each of the splitters, 127(0), (1), (2), and (3).

As a result of feeding the respective splitter outputs to respective inputs of the group of four multiplexers 129(0), (1), (2), and (3), the inputs are combined in the respective multiplexer to a single output signal at each output. Each of the outputs is identical to each of the other outputs of the structure 123 of Fig. 9. However, because of the multiplexing function carried out by the elements 129 (0), (1), (2), and (3), the outputs 131(0), (1), (2), and (3) are different from the inputs to the splitters 127(0), (1), (2), and (3). This structure and process are quite unlike the structure of claim 76.

Text cited by the Examiner Col. 11 lines, 5-33 supports the above conclusion. For example, Col. 11 explains that each splittler/multipler 123 has "zeroth to third input waveguides 125(0), 125 (1), 125(2) and 125(3) (Col. 11, lines 8-9). Subsequently, Suemura et al. state that:

> "On the substrate 77, Q or zeroth to third optical splitters (SPLIT) 127(0), 127(1), 127(2), and 127(3) or 127 are connected respectively to the Q input waveguides 125 to split each optical signal into Q split signals with no regard to destinations of the split signals. Cross-connected to the Q optical splitters 127 by intermediate waveguides are Q or zeroth to third wavelength multiplexers (MUX) 129(0), 129(1), 129(2), and 129(3) or 129 to produce Q wavelength multiplexed signals in each of which wavelength multiplexed are the zeroth to the third split signals supplied from the Q optical splitters 127, respectively. These Q wavelength multiplexed signals are delivered to Q or zeroth to third output waveguides 131(0), 131(0)[sic], 131(2), and 131(3) or 131, respectively. [Col. 11, lines 12-24]

As the above text makes clear, consistent with Fig. 9, and unlike the structure of claim 76, each of the inputs to element 123 is combined with all of the other inputs to element 123. This structure is thus quite unlike the claimed structure.

The Examiner in rejecting claim 76 has gone on to state in the last 3 lines of page 4 and the middle of page 5, that:

> "However, Suemura does not specifically teach wherein the above waveguide connecting an input to an output is an optical fiber. Nevertheless, Suemura with respect to prior art signal coupling network [sic] states that the interconnection between various inputs/outputs are carried out through optical fibers ... Thus, it would have been obvious to a person of ordinary skill in the art when the invention was made to modify Suemura's input output modules 123 by replacing their respective optical waveguides with that of conventional optical fibers, such as those of optical fibers $73_{0\text{-}3}$, in order to produce a signal coupling network that includes the above limitation, since the resultant optical network would provide an optical crossbar switch which is compact and is of low cost."

The above rationale, however, does not refer to and fails to address the fact that the structure of and processing carried on by the module 123 in multiplexers 129(0)...(3) produces a

completely different set of outputs than the inputs thereto. The Examiner has failed to articulate any suggestion, motivation or teaching in Suemura et al. which would motivate one of skill in the art to modify element 123 of Suemura et al. so as to make the structure of claim 76 obvious. The only motivation for such modification comes from the present application. This represents a case of hindsight reconstruction which cannot properly support a *prima facie* case of obviousness.

In fact, one of ordinary skill in the art would not modify element 123 of Suemura et al. as suggested by the Examiner so as to make claim 76 obvious, since doing so would make element 123 unsuited for its intended purpose. As noted in Section 2143.02 of the MPEP, page 2100-127:

> "If proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, than there is no suggestion or motivation to make the proposed modification."

The above makes clear that where is here, the proposed modification of the prior art element, in this case element 123 of Fig. 9, would render the element unsatisfactory for its intended purpose that there is no suggestion or motivation to make the proposed modification. Unlike the claimed structure, the purpose of element 123, of Fig. 9 of Suemura et al., is to provide a plurality of outputs each of which represents a multiplexed combination of the inputs. Altering the structure of Fig. 9 such that:

> "each module having K^2 inputs coupled to K^2 outputs with each input coupled to only one output by a separate optical transmitting fiber with each fiber extending only between one input and one output pair" (Claim 76)

destroys the capability of element 123 to provide a plurality of multiplexed output signals on different output lines. Indeed, the Examiner's modification would appear to require that the multiplexers of element 123 of Fig. 9 be eliminated therefrom in some fashion. This modification is also inconsistent with Section 2143.02, page 2100-127 of the MPEP, which makes it clear that:

> "If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified,

then the teachings of the references are not sufficient to render the claims *prima facie* obvious."

The above is further reason as to why the Examiner's proposed modification of Fig. 9 of Suemura et al. so as to make claim 76 obvious would not be carried out by one of skill in the art since doing so would require a change in "the principle of operation of the prior art invention being modified". Such extensive reconstruction and redesign of the elements of Fig. 9 leads away from a conclusion of obviousness.

For all of the above reasons, it is submitted that claim 76 is in fact allowable over Suemura et al. and allowance thereof is respectfully requested. Allowance of claim 76, in accordance with the above, obviates the Examiner's objection to claims 77-80, all of which depend directly or indirectly from claim 76. All of the remaining claims had previously been allowed. Allowance of the application is respectfully requested.

Respectfully submitted,

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